DOCUMENT RESUME

ED 377 000 RC 019 862

AUTHOR	Crume, Charles T., Jr.; Lang, G. Mac
TITLE	An Analysis of the Camp Wallace, Camp Currie and Camp Webb Studies: A Comparison of Self-Concept and Wilderness Anxiety Scores.
INSTITUTION	Kentucky State Dept. of Fish and Wildlife Resources, Frankfort.
PUB DATE	Nov 92
NOTE	40p.
PUB TYPE	Reports - Research/Technical (143)
EDRS PRICE	MF01/PC02 Plus Postage.
DESCRIPTORS	Affective Measures; *Anxiety; Fear; Females; Intermediate Grades; Males; Outdoor Education; Pretests Posttests; *Program Effectiveness; *Resident Camp Programs; *Self Concept; Sex Differences; *Student Attitudes; *Wilderness
IDENTIFIERS	Willoughby Personality Schedule

ABSTRACT

This report examines self-concept and wilderness anxiety among fifth- and sixth-grade students attending three summer camps operated in different regions of Kentucky by the Kentucky Department of Fish and Wildlife Resources (KDFWR). Program content at each 1-week camp was standard, consisting of a set of outdoor experiences and instruction. More than 2,000 camp participants completed the Willoughby Schedule (a self-concept instrument) and the Crume/Ellis Wilderness Anxiety Scale (CEWAS) at the beginning and end of their camping experience. Data were analyzed for significant differences between pretest and posttest scores among randomized groups of males and females. Analysis also included within-camp and between-camp differences. Pretest data were used to produce male and female means as standards for future interpretation of Willoughby Schedule and CEWAS scores among fifth- and sixth-graders. The following conclusions were generated: (1) KDFWR camps had a positive effect upon the Willoughby Schedule and CEWAS scores of participants; (2) there were regional differences in pretest scores; (3) pretest scores were generally lower (more positive self-concept and lower levels of anxiety) for males than for females; (4) prior outdoor experience seemed to have a positive effect on pretest scores; (5) there was little evidence of a correlation between wilderness anxiety and self-concept; and (6) if the relationship between negative environmental behaviors and wilderness anxiety exists, then KDFWR camp programs will result in improved environmental behavior among participants. Contains 25 data tables and 18 references. (LB)

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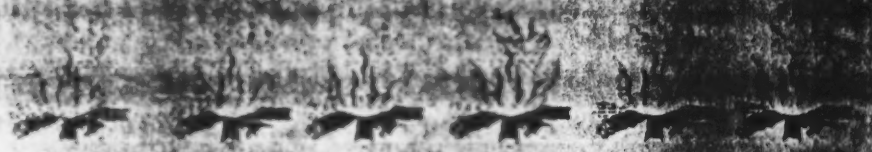

AN ANALYSIS OF THE CAMP WALLACE, CAMP CURRIE AND CAMP WEBB STUDIES: A COMPARISON OF SELF-CONCEPT AND WILDERNESS ANXIETY SCORES

by

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AN ANALYSIS OF THE CAMP WALLACE, CAMP CURRIE, AND CAMP WEBB STUDIES: THE DIMENSIONS OF SELF-CONCEPT AND WILDERNESS ANXIETY AMONG FIFTH AND SIXTH GRADE CAMPERS ATTENDING A KENTUCKY DEPARTMENT OF FISH AND WILDLIFE CAMP

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November 1992

RC019862

ACKNOWLEDGMENTS

The researchers would like to acknowledge the support of the following that made this research possible:

We greatly appreciate the cooperation of the supervisors and staff of the Information and Education Division of the Kentucky Department of Fish and Wildlife Resources.

We thank the supervisors and staff of Camp Wallace, Camp Currie, and Camp Webb for their cooperation and the accommodations afforded the researchers during the collection of data at their facilities.

We gratefully acknowledge the efforts of the graduate students at Western Kentucky University for their efforts in data collection and attention to detail in the handling of data.

Finally, we acknowledge and commend the Kentucky Department of Fish and Wildlife Resources for its sponsorship and commitment to meaningful research directed toward the improvement of public programming.

DEDICATION

While attending the University of Kentucky during my doctoral studies, I was fortunate in coming under the direction of Dr. James Ogletree. During one of his lectures, I recorded the following statement:

> "Academic degrees and educational research are not worth the paper they are written on unless they are used to the benefit of students."

This study is dedicated to the ends Dr. Ogletree so aptly stated.

Chuck Crume

ABSTRACT

Data related to self-concept and wilderness anxiety among male and female fifth and sixth grade students attending a one week Department of Fish and Wildlife Resources summer camp at Camp Wallace, Camp Currie, and Camp Webb were collected during the summers of 1990, 1991, and 1992. Randomly selected pre-test and post-test groups completed Willoughby Schedule (self-concept scale) and Crume/Ellis Wilderness Anxiety Scale (CEWAS) instruments.

The Camp Wallace study included randomized samples sizes of: Female pre-test, (N = 231); post-test, (N = 226); Male pre-test, (N = 193); post-test, (N = 217); Male Plus Female pre-test, (N = 424); post-test, (N = 443). Analysis of Willoughby Schedule data produced significant pre-test/post-test score differences (.05) for both male and female groups and (.001) for the male plus female groups. Pre-test/post-test differences were significant (.05 or greater) in six of the seven categories and (.001) on total wilderness anxiety for male groups, (.05 or greater) in two of seven categories and no significance on total anxiety for female groups, (.05 or greater) in six of seven categories, and (.001) on total anxiety for male plus female groups. All pre-test/post-test differences were positive, with the exception of two categories on the wilderness anxiety instrument which were negative but not at a significant level.

The Camp Currie study included randomized samples sizes of: Female pre-test, (N = 188); post-test, (N = 177); Male pre-test, (N = 200); post-test, (N = 189); Male Plus Female pre-test, (N = 388); post-test, (N = 366). Analysis of Willoughby Schedule data produced significant pre-test/post-test score differences (.001) for males, (.766) females, and (.129) for the male plus female group. Pre-test/post-test differences were significant (.05 or greater) in five of the seven categories and (.004) on total wilderness anxiety for male groups, (.05 or greater) in two of seven categories and no significance on total anxiety for female groups, (.05 or greater) in five of seven categories and (.001) on total anxiety for male plus female groups. All pre-test/post-test differences were positive, with the exception of two of two categories on the wilderness anxiety instrument which were negative but not at a significant level.

The Camp Webb study included randomized samples sizes of: Female pre-test, (N = 196); post-test, (N = 178); Male pre-test, (N = 193); post-test, (N = 158); Male Plus Female pre-test, (N = 389); post-test, (N = 334). Analysis of Willoughby Schedule data produced no significant pre-test/post-test score differences. Analysis of Crume/Ellis Wilderness Anxiety Scale data produced no significant differences.

When merged, the data from the combined studies included randomized samples sizes of: Female pre-test, (N = 615); post-test, (N = 581); Male pre-test, (N = 586); post-test, (N = 564); Male Plus Female pre-test, (N = 1151); post-test, (N = 1147). Analysis of female

Willoughby Schedule data produced no significant pre-test/post-test score differences. Wilderness anxiety (CEWAS) pre-test/post-test differences were significant (.05 or greater) in five of the seven categories and but not significant (.05) on the total wilderness anxiety (CEWAS) score. Analysis of male Willoughby Schedule data produced significant pre-test/post-test score differences (.001). Wilderness anxiety (CEWAS) pre-test/post-test differences were significant (.05 or greater) in all seven categories and (.001) on total wilderness anxiety.

When merged total group pre-test data for males and females were analyzed, males produced significantly more positive Willoughby Schedule scores than females (.004). Male wilderness anxiety (CEWAS) scores indicated signiticantly less anxiety (.001) in four of the seven categories and on total wilderness anxiety.

When Willoughby Schedule pre-test scores were analyzed for significant differences between camp groups, female Camp Wallace scores were significantly less positive (.02) than female Camp Webb scores. Comparison of Wallace/Currie and Currie/Webb produced no significant differences. An analysis of male scores produced no significant differences. Male Willoughby Schedule pre-test scores were not significantly different between any of the camps.

When wilderness anxiety pre-test scores were analyzed, female Camp Wallace scores were significantly different from Camp Currie scores in two of the seven categories and total score; Camp Wallace scores were significantly different from Camp Webb scores in all seven categories and on total score; Camp Currie scores were significantly different from Camp Webb scores in five of the seven categories but not significantly different on total score. When wilderness anxiety pre-test scores were analyzed, male Camp Wallace scores were significantly different from Camp Currie scores in five of the seven categories but not on total score; Camp Wallace scores were significantly different from Camp Webb scores in six of the seven categories and on total score; Camp Currie scores were significantly different from Camp Webb scores in four of the seven categories but not significantly different on total score.

Mean Willoughby Schedule (self-concept) pre-test scores for females by camp and total group are as follows:

Wallace	Currie	Webb	Total of all Camps
36.90	34.74	33.69	35.22

Mean Willoughby Schedule (self-concept) pre-test scores for males by camp and total group are as follows:

Wallace	Currie	Webb	Total of all Camps
33.10	32.31	32.56	32.65

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Mean Wilderness Anxiety (CEWAS) Pre-test Scores For Females By Camp And Joined Data

Variable	Wallace n = 222	Currie n = 188	Webb n = 196	Joined Data n = 606
Fear of:				
Sudden Attack	32.09	29.55	28.96	30.24
Poisonous Plants	4.04	3.91	13.80	7.16
Sharp Objects	10.86	10.03	9.36	10.12
Venomous and Infectious Animals	18.45	16.27	4.21	13.17
Inclement Weather	4.09	4.28	13.49	7.18
Water	3.66	3.00	4.73	3.80
Being Lost or Alone	12.82	11.55	4.30	9.58
CEWAS Total	86.01	78.51	78.55	81.27

n = number in sample

Mean Wilderness Anxiety (CEWAS) Pre-test Scores For Males By Camp And Joined Data

Variable	Wallace n = 186	Currie n = 200	Webb n = 193	Joined Data n = 579
Fear of:				
Sudden Attack	25.78	21.13	19.79	22.18
Poisonous Plants	3.65	2.99	8.56	5.06
Sharp Objects	10.02	7.85	7.02	8.27
Venomous and Infectious Animals	12.39	9.86	3.31	8.49
Inclement Weather	5.49	4.37	10.52	6.78
Water	4.41	4.18	3.80	4.13
Being Lost or Alone	13.28	10.46	3.50	9.05
CEWAS Total	75.12	64.26	56.18	65.05

n = number in sample

(Note: Above data rounded to two places.)

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Introduction

In the spring of 1990, the Hunter Education Division of the Kentucky Department of Fish and Wildlife Resources (KDFWR) and the Recreation and Park Administration Curriculum at Western Kentucky University began a joint research project. The project was the second in a series of research efforts aimed at understanding and improving KDFWR's educational offerings. The first research project was a survey of volunteer hunter education instructors in which perceptions of positive and negative motivators were determined and ranked.

The self-concept and wilderness anxiety research project was designed to be a three part study conducted at Camp Wallace, Camp Currie, and Camp Webb. An experimental design was utilized to generate data at each of the three camps. Data was analyzed for significant differences between pre-test and post-test scores among randomized groups of males and females. Analysis included individual camp and between camp differences. Joined data was analyzed for overall differences and pre-test data was used to produce male and female means to be used as standards for the future interpretation of Willoughby Schedule and CEWAS scores among fifth and sixth graders.

Purposes of the Study

1. To investigate the impact of the KDFWR's summer camping program on the self-concept of fifth and sixth grade participants

2. To investigate the impact of the KDFWR's summer camping program

on the wilderness anxiety of fifth and sixth grade participants

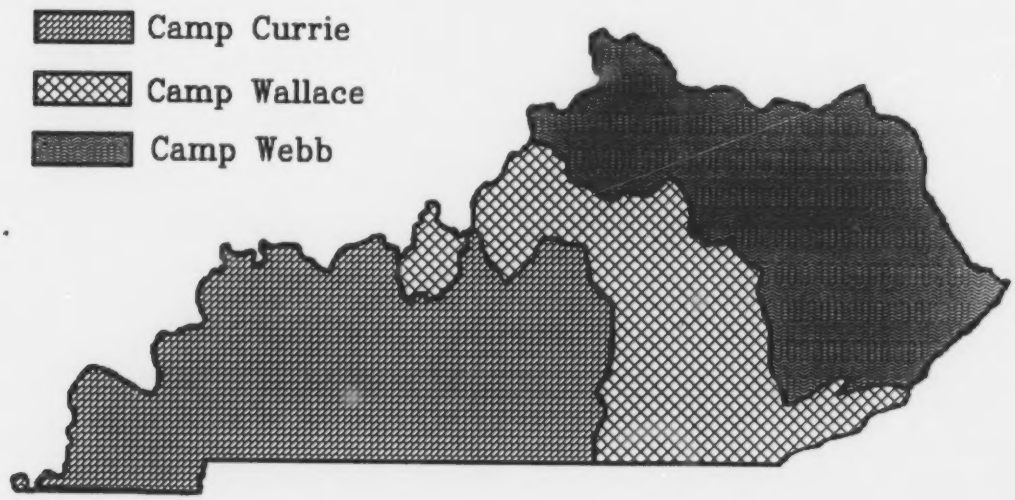
3. To evaluate the Willoughby schedule (a self-concept instrument) and the Crume/Ellis Wilderness Anxiety Scale (CEWAS) for possible use in the gathering of data related to participants at the beginning of the camping process

4. To generate mean Willoughby Schedule and CEWAS scores for males, females, and total groups at Camp Currie, Camp Wallace, and Camp Webb

5. To evaluate collected data in an effort to gain a better understanding of the young people served by these camping programs with special attention to possible regional differences.

Kentucky has considerable diversity between urban and rural populations and economic conditions. Such diversity is somewhat regionalized. Since the three camps operated by the KDFWR are located in three separate regions within the state and serve separate segments of the population, this natural division was used for the purpose of data analysis (See Illustration 1, below).

Illustration 1. Camp Service Regions



It was anticipated there might be significant differences between regional self-concept and wilderness anxiety scores.

Methodology

Design

A completely randomized experimental design was utilized.

Instrumentation

The Willoughby Schedule was selected as an instrument for collecting self-concept data. The Crume/Ellis Wilderness Anxiety Scale was selected to collect wilderness anxiety data.

Willoughby Schedule - The Willoughby Schedule is a self-report instrument with a history of replications and revalidations. It has been judged to be both valid and reliable (Hestand et al. 1971, Boles 1980, Crume 1986).

Crume/Ellis Wilderness Anxiety Scale - The Crume/Ellis Wilderness Anxiety Scale (CEWAS) was developed in 1984 at Western Kentucky University and contains potential sources of anxiety from both the biological and physical environments. Data from a test sample of two hundred twenty-six junior high school students were analyzed through a principal axis factor analysis. Squared multiple correlation coefficients were used as initial estimates of commonality. Factors with eigenvalues greater than unity were rotated to simple structure according to varimax criterion. Factor based scales were constructed by combining items with loadings of .35 or greater. Crombach's alpha was calculated as an estimate of internal consistency of each of the resulting scales. The estimate of internal consistency for the entire

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scale was .96. Each of the seven scales produced reliability estimates in excess of .80 (Crume and Ellis 1984).

Study Sites

The program content at each of the KDFWR camps is relatively standard, consisting of a set of outdoor related experiences and instruction. Camp programs are scheduled at one week intervals during the summer months. Programming is the same for males and females which are scheduled during different intervals. The camp population is divided into cabin groups of approximately twenty campers each. This system is the same for all camps.

Sample

The study sample was generated through a computerized random selection of weeks and cabins. Randomized pre-test and post-test groups of males and females were generated for each of the three camps. Pre-test and post-test sample size was planned to include approximately two hundred individuals in each of the male and female pre-test and post-test groups. Total sample size was anticipated as eight hundred individuals per camp with a total study population in excess of two thousand subjects. Pre-test subjects, whose scores would be used to produce total group male and female means, were anticipated to exceed one thousand subjects.

Testing and Data Processing

Pre-test instruments were completed by subjects the night of their arrival at camp under the supervision of a researcher. Post-test instruments were completed by subjects the night before their departure

under the supervision of a researcher. Completed instruments were placed in a box and subjects were told not to place their names on the answer sheets. Subjects were also told that their responses would be anonymous and that each item should be treated honestly, reflecting the subject's best judgement of personal feelings about that item.

Completed answer sheets were placed in packets and labeled by date, sex, camp, and cabin. Data from answer sheets were posted on tally sheets and then entered into a computerized spread sheet for statistical analysis.

Treatment of Data

Data were treated using the SOLO Statistical Package. Descriptive statistics, T tests, and multiple regression analysis was used to test for significant differences between pre-test and post-test data for males and females. Differences between camps and joined data were also analyzed. Joined data were utilized to produce mean pre-test scores and profiles for the purposes of standardization and future use for Willoughby Schedule and CEWAS categories.

Reporting of Findings

Findings were to be reported in separate publications related to the study at each camp. A final publication where data from all studies would be merged and joined for among group and between group analysis would be published.

Report of Findings

The following paper summarized data collected in the Camp Wallace,

Camp Currie, and Camp Webb studies. It also merged male, female, and total group data producing mean scores. Data for the merged groups were analyzed for significance difference between pre-test and post-test results among male and female groups and compares pre-test scores for between camp differences. Joined group data was treated to produce mean scores for males and females at each camp and total group means among all camps.

This paper will:

1. Provide mean scores for evaluating individual Willoughby Schedule and CEWAS scores among KDFWR camp participants

2. Provide an estimate of the effects of KDFWR camps on the self-concept and wilderness anxiety of participants

3. Add to the validity and reliability of the Camp Wallace, Camp Currie, and Camp Webb studies

4. Add to the validity and reliability of the Willoughby Schedule and the CEWAS instruments as collectors of self-concept and wilderness anxiety data relative to fifth and sixth graders in Kentucky

5. Add to the knowledge of individual differences among fifth and sixth graders related to regional origins

6. Provide some basis for interpretation of the Currie/Wallace data relative to potential behavior.

1. Provide mean scores for evaluating individual Willoughby Schedule and CEWAS scores among KDFWR camp participants

Willoughby Schedule:

Data from the Camp Wallace, Camp Currie, and Camp Webb studies were merged to produce total group mean scores. The mean score for males completing the Willoughby Schedule was 32.65. This score was slightly more negative than that of university age males registered in

the Crume (1982) study.

The mean score for females completing the Willoughby Schedule was 35.22. This score was also slightly more negative than that of university age females registered in the Crume (1982) study, but showed less difference than the males (See Table 1 below).

Scores on the Willoughby Schedule may range from 0 to 100. The lower the score, the more positive the self-concept. The table below indicated a range of mean scores from the mid-twenties to the mid-thirties.

A typical curve of Willoughby Schedule scores was found in

Table 1. Comparison of Willoughby Schedule validation study (1932), Hestand, Howard, and Gregory replication (1971), Crume replication (1986), and Total Group means.

Variable	Total Group Mean	Crume Group Mean	Hestand Replication Mean	Willoughby Validation Mean
Male	32.65	27.99	31.0	28.9
Female	35.22	33.80	35.0	36.1

Note: The original Willoughby Validation study (1932) and the Hestand Replication (1971) did not include minorities. The Crume Study Group (1982) contained approximately 15% minority students and the Total Group Studies (1992) contained approximately 5% minority students.

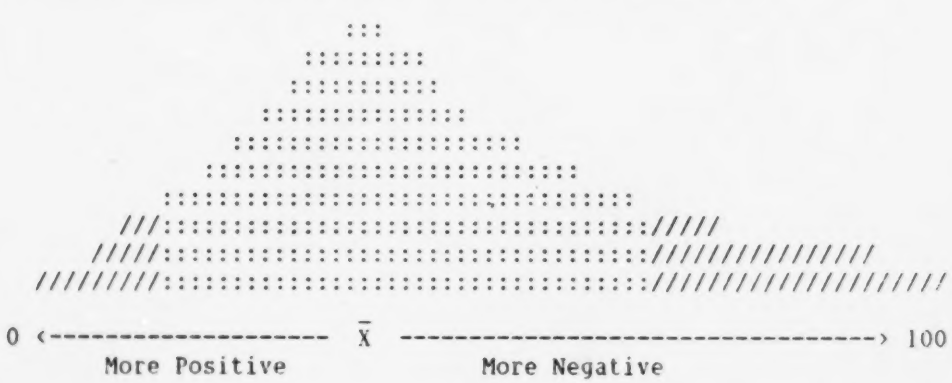
Illustration 2 below. Note that scores are skewed to the low or more positive side. This type of curve was characteristic of both males and females. Males, however, tended to have slightly more positive mean self-concept scores than did females.

In attempting an interpretation of an individual score, one must

consider how far the score deviated from the mean in each direction. Since there ras no exact point at which a score indicates a healthy or unhealthy self-concept, distance from the mean becomes important. In the Illustration below the areas of the curve described with a (/) deviate enough from the mean that scores within this area could be cause for concern.

Individuals with an exaggerated self-concept are apt to take unnecessary risks or become risky leadership models. On the other hand, a very low self-concept will cause an individual to avoid activities and, in many cases, fail or drop out. Those in charge of groups of people are better able to deal with individuals and the group as a whole if they are aware of self-concept variations.

Illustration 2. Willoughby Schedule Score Distribution



Crume/Ellis Wilderness Anxiety Scale:

Scores on the Crume/Ellis Wilderness Anxiety Scale (CEWAS) were related to those on the Willoughby Schedule in that they became a cause

for concern when they deviated significantly from the mean. An individual having little or no anxiety about those things that can be harmful in an outdoor setting invits trouble. On the other hand, a person with extreme fear will avoid experiences that could be valuable. The ideal situation would be a healthy respect and behavior appropriate to the conditions.

Table 2. Merged Male, Female, and Male Plus Female Crume/Ellis Wilderness Anxiety Scale Mean Scores.

Fear of:	Male n = 441 Mean	Female n = 462 Mean	Male+Female n = 903 Mean
Sudden Attack	23.37	30.93	27.26
Poisonous Plants	3.31	3.98	3.65
Sharp Objects	8.89	10.48	9.71
Venomous and Infectious Animals	11.08	17.45	14.36
Inclement Weather	4.91	4.18	4.53
Water	4.30	3.36	3.81
Being Lost or Alone	11.82	12.24	12.04
CEWAS Total	69.49	82.56	76.22

n = number in sample

Table 2 above indicated approximate expectations for levels of wilderness anxiety among fifth and sixth graders in Kentucky. Note that the levels of anxiety were higher for females than for males, with the exception of Inclement Weather and Water. On these two items the females had a lower mean anxiety score than did their male counterparts.

2. Provide an estimate of the effects of KDFWR camps on the self-concept and wilderness anxiety of participants

Camp Earl Wallace Study

Males

Analysis of data for males indicated a significant improvement in Willoughby Schedule (self-concept) scores. A significant improvement in CEWAS (wilderness anxiety) scores was observed in six of the seven factor areas and in the total CEWAS score. On the factor, Fear of Water, no significant difference was found (Table 3).

Table 3. Male Willoughby Schedule and CEWAS Data and Significance
Camp Earl Wallace Study

Variable	Pre-test		Post-test		t-value	Sig.
	n =	x =	n =	x =		
Willoughby Schedule	193	33.10	217	28.71	3.03	.002 *
Fear of:						
Sudden Attack	186	25.78	204	21.22	3.89	.001 *
Poisonous Plants	186	3.65	204	2.96	2.23	.026 *
Sharp Objects	186	10.02	204	7.12	4.73	.001 *
Venomous and Infectious Animals	186	12.39	204	9.37	3.71	.001 *
Inclement Weather	186	5.49	204	2.88	4.99	.001 *
Water	186	4.41	204	3.44	1.94	.052
Being Lost or Alone	186	13.28	204	9.28	5.09	.001 *
CEWAS Total	186	75.12	204	56.57	5.18	.001 *

n = number in sample x = mean * significance of above (.05)

Females

Analysis of data for females indicated a significant improvement in Willoughby Schedule (self-concept) scores. A significant improvement

in CEWAS (wilderness anxiety) scores was observed in two of the seven factor areas but not in the total CEWAS score. On the factors, Fear of Sudden Attack and Fear of Venomous and Infectious Animals, a significant difference was found (Table 4).

Table 4. Female Willoughby Schedule and CEWAS Data and Significance Camp Earl Wallace Study

Variable	Pre-test		Post-test		t-value	Sig.
	n =	x =	n =	x =		
Willoughby Schedule	231	36.91	226	33.55	2.25	.033 *
Fear of:						
Sudden Attack	222	32.09	214	28.48	2.88	.004 *
Poisonous Plants	222	4.04	214	3.59	1.59	.111
Sharp Objects	222	10.86	214	9.82	1.76	.079
Venomous and Infectious Animals	222	18.45	214	16.39	2.53	.011 *
Inclement Weather	222	4.09	214	4.59	-.90	.366
Water	222	3.66	214	3.84	-.10	.690
Being Lost or Alone	222	12.82	214	12.57	.31	.758
CEWAS Total	222	86.01	214	79.28	1.88	.061

n = number in sample x = mean * significance of above (.05)

Males Plus Females

Analysis of data for males plus females indicated a significant improvement in Willoughby Schedule (self-concept) scores. A significant improvement in CEWAS (wilderness anxiety) scores was observed in six of the seven factor areas and in the total CEWAS score (Table 5).

Table 5. Male Plus Female Willoughby Schedule and CEWAS Data and Significance. Camp Earl Wallace Study

Variable	Pre-test		Post-test		t-value	Sig.
	n =	x =	n =	x =		
Willoughby Schedule	424	35.17	443	31.18	3.80	.001 *
Fear of:						
Sudden Attack	409	29.20	418	24.94	4.77	.001 *
Poisonous Plants	409	3.85	418	3.28	2.77	.005 *
Sharp Objects	409	10.47	418	8.65	4.45	.001 *
Venomous and Infectious Animals	409	15.68	418	12.97	4.38	.001 *
Inclement Weather	409	4.73	418	3.76	2.51	.012 *
Water	409	4.00	418	3.65	1.05	.293
Being Lost or Alone	409	13.03	418	10.96	3.57	.001 *
CEWAS Total	409	81.04	418	68.20	4.93	.001 *

n = number in sample x = mean * significance of above (.05)

Camp Currie Study

Males

Analysis of data for males indicated a significant improvement in Willoughby Schedule (self-concept) scores. A significant improvement in CEWAS (wilderness anxiety) scores was observed in five of the seven factor areas and in the total CEWAS score. On the factors, Fear of Inclement Weather and Fear of Water, no significant difference was found (Table 6).

Table 6. Male Willoughby Schedule and CEWAS Data and Significance Camp Currie Study

Variable	Pre-test		Post-test		t-value	Sig.
	n =	x =	n =	x =		
Willoughby Schedule	200	32.31	189	26.22	3.57	.001 *
Fear of:						
Sudden Attack	200	21.13	189	15.16	4.36	.001 *
Poisonous Plants	200	2.99	189	2.35	2.05	.040 *
Sharp Objects	200	7.85	189	5.97	2.89	.004 *
Venomous and Infectious Animals	200	9.86	189	7.42	2.92	.004 *
Inclement Weather	200	4.37	189	4.04	.54	.580
Water	200	4.18	189	3.21	1.43	.152
Being Lost or Alone	200	10.46	189	8.16	2.63	.008 *
CEWAS Total	200	64.26	189	46.26	2.90	.004 *

n = number in sample x = mean * significance of above (.05)

Females

Analysis of data for females indicated no significant improvement

Table 7. Female Willoughby Schedule and CEWAS Data and Significance Willoughby Schedule and CEWAS Data and Significance Camp Currie Study

Variable	Pre-test		Post-test		t-value	Sig.
	n =	x =	n =	x =		
Willoughby Schedule	188	34.74	177	35.68	-.298	.766
Fear of:						
Sudden Attack	188	29.55	177	26.49	1.38	.166
Poisonous Plants	188	3.91	177	3.16	2.12	.034 *
Sharp Objects	188	10.03	177	8.52	2.23	.026 *
Venomous and Infectious Animals	188	16.27	177	14.60	1.72	.085
Inclement Weather	188	4.28	177	5.26	-1.42	.156
Water	188	3.00	177	3.70	-1.35	.176
Being Lost or Alone	188	11.55	177	10.34	1.39	.163
CEWAS Total	188	78.51	177	70.03	1.90	.057

n = number in sample x = mean * significance of above (.05)

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in Willoughby Schedule (self-concept) scores. A significant improvement in CEWAS (wilderness anxiety) scores was observed in two of the seven factor areas but not in the total CEWAS score. On the factors, Fear of Sharp Objects and Fear of Poisonous Plants, a significant difference was found (Table 7).

Males Plus Females

Analysis of data for males plus females indicated no significant improvement in Willoughby Schedule (self-concept) scores. A significant improvement in CEWAS (wilderness anxiety) scores was observed in five of the seven factor areas and in the total CEWAS score (Table 8).

Table 8. Male Plus Female Willoughby Schedule and CEWAS Data and Significance. Camp Currie Study

Variable	Pre-test		Post-test		t-value	Sig.
	n =	x =	n =	x =		
Willoughby Schedule	388	33.49	366	30.79	1.52	.129
Fear of:						
Sudden Attack	388	25.21	366	20.64	3.43	.001 *
Poisonous Plants	388	3.44	366	2.75	2.93	.001 *
Sharp Objects	388	8.90	366	6.53	3.58	.001 *
Venomous and Infectious Animals	388	13.00	366	10.90	3.04	.001 *
Inclement Weather	388	4.33	366	4.63	-.66	.507
Water	388	3.61	366	3.45	.37	.710
Being Lost or Alone	388	10.99	366	9.21	2.87	.010 *
CEWAS Total	388	71.16	366	57.76	3.42	.001 *

n = number in sample x = mean * significance of above (.05)

Males

Table 9. Male Willoughby Schedule and CEWAS Data and Significance Camp Webb Study

Variable	Pre-test		Post-test		t-value	Sig.
	n =	x =	n =	x =		
Willoughby Schedule	193	32.56	158	31.32	.726	.468
Fear of:						
Sudden Attack	193	19.79	158	20.34	-.412	.680
Poisonous Plants	193	8.56	158	8.36	.252	.080
Sharp Objects	193	7.02	158	6.70	.534	.593
Venomous and Infectious Animals	193	3.31	158	2.97	.683	.495
Inclement Weather	193	10.52	158	11.42	-.930	.353
Water	193	3.80	158	3.66	.262	.794
Being Lost or Alone	193	3.50	158	4.07	-1.09	.276
CEWAS Total	193	56.18	158	57.49	-.316	.751

n = number in sample x = mean * significance of above (.05)

Analysis of data for males indicated no significant improvement in Willoughby Schedule (self-concept) scores or in CEWAS (wilderness anxiety) scores (Table 9).

Females

Analysis of data for females indicated no significant improvement in Willoughby Schedule (self-concept) scores or in CEWAS (wilderness anxiety) scores (Table 10).

Table 10. Female Willoughby Schedule and CEWAS Data and Significance Willoughby Schedule and CEWAS Data and Significance Camp Webb Study

Variable	Pre-test		Post-test		t-value	Sig.
	n =	x =	n =	x =		
Willoughby Schedule	196	33.69	176	36.60	-1.68	.091
Fear of:						
Sudden Attack	196	28.96	176	29.76	-.568	.569
Poisonous Plants	196	13.80	176	14.07	-.343	.732
Sharp Objects	196	9.36	176	9.40	-.201	.840
Venomous and Infectious Animals	196	4.21	176	4.11	.284	.777
Inclement Weather	196	13.47	176	14.92	-1.47	.142
Water	196	4.73	176	5.52	-1.37	.171
Being Lost or Alone	196	4.03	176	4.11	-.164	.869
CEWAS Total	196	78.55	176	81.97	-.831	.106

n = number in sample x = mean * significance of above (.05)

Males Plus Females

Table 11. Male Plus Female Willoughby Schedule and CEWAS Data and Significance. Camp Webb Study

Variable	Pre-test		Post-test		t-value	Sig.
	n =	x =	n =	x =		
Willoughby Schedule	389	33.13	334	34.10	-.790	.420
Fear of:						
Sudden Attack	389	24.41	334	25.31	-.867	.386
Poisonous Plants	389	11.20	334	11.37	-.284	.776
Sharp Objects	389	8.20	334	8.17	.007	.939
Venomous and Infectious Animals	389	3.76	334	3.57	.629	.529
Inclement Weather	389	12.00	334	13.26	-1.79	.073
Water	389	4.27	334	4.64	.907	.365
Being Lost or Alone	389	3.77	334	4.09	-.923	.356
CEWAS Total	389	67.45	334	70.39	-.964	.335

n = number in sample x = mean * significance of above (.05)

Analysis of data for males plus females indicated no significant improvement in Willoughby Schedule (self-concept) scores or in CEWAS (wilderness anxiety) scores (Table 11).

3. Add to the validity and reliability of the Camp Wallace, Camp Currie, and Camp Webb studies

The results of the Camp Currie Study generally followed the results of the Camp Earl Wallace Study, with the exception of the Female Willoughby Pre-test Scores which were more positive. CEWAS Scores for this female group were also more positive in some areas.

The results of the Camp Webb Study produced no significant differences when the findings were analyzed. In terms of the Willoughby Schedule, both male and female pre-test scores were more positive than than the mean pre-test scores for the joined group. These more positive self-concept scores might have mitigated the finding of significant change.

The Camp Webb study group produced quite different mean pre-test scores on some categories of the CEWAS instrument. Some differences, however, were anticipated due to the rural nature of the Camp Webb students.

The results of Camp Wallace, Camp Currie, and Camp Wallace Studies provided evidence of the validity and reliability of the study design as well as the ability of the design to project regional differences reflected in self-concept and wilderness anxiety scores.

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4. Add to the validity and reliability of the Willoughby Schedule and the CEWAS instruments as collectors of self-concept and wilderness anxiety data relative to fifth and sixth graders in Kentucky

The results of the Camp Wallace, Camp Currie, and Camp Webb Studies indicated the ability of the Willoughby Schedule and CEWAS instruments to discriminate between levels of self-concept and levels of wilderness anxiety. The total number of subjects (pre-test n = 1151 and post-test n = 1147) provided a large enough sample to reduce the element of chance in analyzing the findings.

Feedback from those administering the instruments indicated that the instruments were easy to administer and score. Results indicate that the instruments are reliable in gathering self-concept and wilderness anxiety data.

5. Add to the knowledge of individual differences among fifth and sixth graders related to regional origins

Table 12. Mean Willoughby Schedule (self-concept) Pre-test Scores for Females by Camp and Total Group

Wallace	Currie	Webb	Total of all Camps
36.90	34.74	33.69	35.22

Table 13. Mean Willoughby Schedule (self-concept) Pre-test Scores for Males by Camp and Total Group

Wallace	Currie	Webb	Total of all Camps
33.10	32.31	32.56	32.65

Table 14. Mean Wilderness Anxiety (CEWAS) Pre-test Scores For Females By Camp And Joined Data

Variable	Wallace n = 222	Currie n = 188	Webb n = 196	Joined Data n = 606
Fear of:				
Sudden Attack	32.09	29.55	28.96	30.21
Poisonous Plants	4.04	3.91	13.80	7.16
Sharp Objects	10.86	10.03	9.36	10.12
Venomous and Infectious Animals	18.45	16.27	4.21	13.17
Inclement Weather	4.09	4.28	13.49	7.18
Water	3.66	3.00	4.73	3.80
Being Lost or Alone	12.82	11.55	4.30	9.58
CEWAS Total	86.01	78.51	78.55	81.27

n = number in sample

Table 15. Mean Wilderness Anxiety (CEWAS) Pre-test Scores For Males By Camp And Joined Data

Variable	Wallace n = 186	Currie n = 200	Webb n = 193	Joined Data n = 579
Fear of:				
Sudden Attack	25.78	21.13	19.79	22.18
Poisonous Plants	3.65	2.99	8.56	5.06
Sharp Objects	10.02	7.85	7.02	8.27
Venomous and Infectious Animals	12.39	9.86	3.31	8.49
Inclement Weather	5.49	4.37	10.52	6.78
Water	4.11	4.18	3.80	4.13
Being Lost or Alone	13.28	10.46	3.50	9.05
CEWAS Total	75.12	64.26	56.18	65.05

n = number in sample

Table 16. Male Willoughby Schedule and CEWAS Data; A Comparison of Camp Wallace and Camp Currie Pre-test Data

Variable / Camp:	Wallace		Currie		t-value	Sig.
	n =	x =	n =	x =		
Willoughby Schedule	193	33.10	200	32.31	.492	.623
Fear of:						
Sudden Attack	187	25.76	200	21.13	3.504	.001 *
Poisonous Plants	187	3.65	200	2.99	2.079	.037 *
Sharp Objects	187	10.02	200	7.85	3.513	.001 *
Venomous and Infectious Animals	187	12.39	200	9.86	3.023	.003 *
Inclement Weather	187	5.49	200	4.37	1.811	.070
Water	187	4.41	200	4.18	.345	.730
Being Lost or Alone	187	13.28	200	10.46	3.279	.001 *
CEWAS Total	187	75.12	200	64.26	1.807	.070

n = number in sample x = mean * significance of above (.05)

Table 17. Female Willoughby Schedule and CEWAS Data; A Comparison of Camp Wallace and Camp Currie Pre-test Data

Variable / Camp:	Wallace		Currie		t-value	Sig.
	n =	x =	n =	x =		
Willoughby Schedule	231	36.90	188	34.74	1.479	.139
Fear of:						
Sudden Attack	222	32.09	188	29.39	2.246	.025 *
Poisonous Plants	222	4.04	188	3.90	.417	.677
Sharp Objects	222	10.86	188	10.03	1.411	.158
Venomous and Infectious Animals	222	18.45	188	16.27	2.607	.009 *
Inclement Weather	222	4.09	188	4.28	-.362	.717
Water	222	3.66	188	3.00	1.590	.113
Being Lost or Alone	222	12.82	188	11.55	1.588	.112
CEWAS Total	222	86.00	188	78.50	2.046	.040 *

n = number in sample x = mean * significance of above (.05)

Table 18. Male Willoughby Schedule and CEWAS Data; A Comparison of Camp Wallace and Camp Webb Pre-test Data

Variable / Camp:	Wallace		Webb		t-value	Sig.
	n =	x =	n =	x =		
Willoughby Schedule	193	33.10	193	32.56	.358	.720
Fear of:						
Sudden Attack	187	25.76	193	19.78	4.955	.001 *
Poisonous Plants	187	3.65	193	7.55	-8.789	.001 *
Sharp Objects	187	10.02	193	7.02	5.093	.001 *
Venomous and Infectious Animals	187	12.39	193	3.31	12.682	.001 *
Inclement Weather	187	5.49	193	10.52	-6.480	.001 *
Water	187	4.41	193	3.80	1.109	.267
Being Lost or Alone	187	13.28	193	3.50	14.279	.001 *
CEWAS Total	187	75.12	193	56.18	5.050	.001 *

n = number in sample x = mean * significance of above (.05)

Table 19. Female Willoughby Schedule and CEWAS Data; A Comparison of Camp Wallace and Camp Webb Pre-test Data

Variable / Camp:	Wallace		Webb		t-value	Sig.
	n =	x =	n =	x =		
Willoughby Schedule	231	36.90	196	33.69	2.185	.028 *
Fear of:						
Sudden Attack	222	32.09	196	28.96	2.532	.011 *
Poisonous Plants	222	4.04	196	13.81	-16.537	.001 *
Sharp Objects	222	10.86	196	9.36	2.693	.007 *
Venomous and Infectious Animals	222	18.45	196	4.21	24.278	.001 *
Inclement Weather	222	4.09	196	13.47	-12.221	.001 *
Water	222	3.66	196	4.73	-2.268	.023 *
Being Lost or Alone	222	12.82	196	4.03	13.442	.001 *
CEWAS Total	222	86.00	196	78.55	1.993	.046 *

n = number in sample x = mean * significance of above (.05)

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Table 20. Male Willoughby Schedule and CEWAS Data; A Comparison of Camp Currie and Camp Webb Pre-test Data

Variable / Camp:	Currie		Webb		t-value	Sig.
	n =	x =	n =	x =		
Willoughby Schedule	200	32.31	193	32.56	-.149	.881
Fear of:						
Sudden Attack	200	21.13	193	19.79	.994	.320
Poisonous Plants	200	2.99	193	8.56	-10.006	.001 *
Sharp Objects	200	7.85	193	7.02	1.296	.195
Venomous and Infectious Animals	200	9.86	193	3.31	8.710	.001 *
Inclement Weather	200	4.37	193	10.52	-7.916	.001 *
Water	200	4.18	193	3.80	.528	.597
Being Lost or Alone	200	10.46	193	3.49	9.670	.001 *
CEWAS Total	200	64.26	193	56.18	1.330	.183

n = number in sample x = mean * significance of above (.05)

Table 21. Female Willoughby Schedule and CEWAS Data; A Comparison of Camp Currie and Camp Webb Pre-test Data

Variable / Camp:	Currie		Webb		t-value	Sig.
	n =	x =	n =	x =		
Willoughby Schedule	188	34.74	196	33.69	.685	.493
Fear of:						
Sudden Attack	188	29.39	196	28.96	.324	.746
Poisonous Plants	188	3.90	196	13.81	-16.296	.001 *
Sharp Objects	188	10.02	196	9.36	1.112	.266
Venomous and Infectious Animals	188	16.27	196	4.21	17.522	.001 *
Inclement Weather	188	4.28	196	13.47	-11.735	.001 *
Water	188	3.00	196	4.73	-3.770	.001 *
Being Lost or Alone	188	11.55	196	4.03	11.375	.001 *
CEWAS Total	188	78.50	196	78.55	-.001	.989

n = number in sample x = mean * significance of above (.05)

Table 22. Intercorrelation Matrix; Willoughby Schedule and CEWAS Factors Based Upon Pre-test Data of Joined Groups (N = 1151)

	F/1	F/2	F/3	F/4	F/5	F/6	F/7	F/T	WS
F/1	1.000	.465	.669*	.633*	.411	.353	.536	.657*	.307
F/2		1.000	.358	-.033	.597	.295	-.009	.382	.157
F/3			1.000	.581	.422	.365	.592	.593	.231
F/4				1.000	.048	.120	.657*	.505	.184
F/5					1.000	.494	.224	.435	.222
F/6						1.000	.390	.371	.234
F/7							1.000	.500	.268
F/T								1.000	.196
WS									1.000

F/1 = Sudden Attack, F/2 = Poisonous Plants, F/3 = Sharp Objects, F/4 = Venomous and Intectious Animals, F/5 = Inclement Weather, F/6 = Water, F/7 = Being Lost and Alone, F/8 = CEWAS Total, and WS = Willoughby Schedule

Tables 12 through 22 project pre-test Willoughby Schedule and CEWAS scores by joining data to produce means for males and female fifth and sixth graders across the state. These tables also compare pre and post-test scores of males and females by region. Analysis of pre-test data is intended to produce the following:

1. A preliminary standard set of means to be used in the interpretation of individual Willoughby Schedule and CEWAS scores.

2. A statistical profile of differences between Willoughby Schedule and CEWAS scores by region

Three findings are evident from the analysis of pre-test scores:

1. There is evidence that male Willoughby Schedule and CEWAS scores may be significantly different than female scores

2. Differences in pre-test Willoughby Schedule and CEWAS scores can be expected between regions

3. There seems to be no significant correlation between levels of Willoughby Schedule scores and CEWAS scores by factor or total.

6. Interpretation the Wallace/Currie/Webb data relative to potential behavior.

When possible, the outcomes of the above types of research should be placed in a behavioral perspective. In the past, efforts to control negative environmental behavior have centered primarily in regulations and penalties for violation. Such attempts are evidence of a lack of understanding of the underlying causes or motivational base for such behavior.

One of the most thorough works on negative environmental behavior or "vandalism" is "Property Destruction: Motives and Meanings" (Cohen, 1973). In his paper, Cohen delineated five motivational categories of vandalism: acquisitive (personal gain), tactical, vindictive, playful, and malicious. A study by Ellis, Crume, Stephenson, and Blackburn (1986) examined a sixth motivational factor: wilderness anxiety.

The possibility that wilderness anxiety may be a motivating factor in negative environmental behavior is found in the psychological literature on aggression. Within this body of literature, two interesting conclusions are reached:

1. Zimbardo (1970) stated that anonymity weakens three primary mechanisms by which people control undesirable behavior: guilt, shame, and fear of reprisal

2. Several studies concluded that stress associated with environmental factors can lead to aggressive behavior (Green and O'Neal 1969, Konecni 1975, and Baron and Bell 1976).

Crume and Ellis (1984) theorized that if negative environmental

behavior is a form of aggression and if wilderness anxiety is a form of stress, it would follow that an individual's propensity toward negative environmental behavior may, in part, be a function of his/her fear of the wilderness. The above studies suggest that this propensity toward negative environmental behavior may be particularly acute if anxiety leads the individual to perceive the wilderness as a threatening opponent and if he/she is able to act anonymously, which is the case in hunting and with most wilderness experiences.

In examining the possible correlation between "wilderness anxiety" and "propensity toward negative environmental behavior", Ellis, Crume, Stephenson, and Blackburn (1986) found the following:

1. The results of the study above suggests that a correlation exists between wilderness anxiety and negative environmental behavior

2. The study also suggests that the relationship is complex, involving correlations between dimensions of the concepts rather than the concepts as a whole.

3. People who fear sudden attack are more likely to cut or chop vegetation and kill animals.

4. In contrast to the first set of correlations, people who fear inclement weather, water, and being lost and alone are less likely to damage the environment and vandalize symbols of authority.

The scores on the CEWAS instrument relative to this study were consistent with those of the above mentioned study. If the conclusions of the above study are correct, students participating in the one week KDFWR camps should behave in a more positive environmental manor.

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Conclusions

The following can be concluded from an analysis of the preceding data:

1. KDFWR camps have a positive effect upon the Willoughby Schedule and CEWAS scores of participants

2. Regional differences in pre-test Willoughby Schedule and CEWAS scores can be expected

3. Pre-test Willoughby Schedule and CEWAS scores are generally lower (more positive self-concept and lower levels of anxiety) for males than for females

4. Prior outdoor experience seems to have a positive effect upon pre-test CEWAS scores and possibly Willoughby Schedule scores but the correlation between these two factors has not been effectively tested and remains open to question

5. There is little evidence for the hypothesis that a significant correlation exists between wilderness anxiety and self-concept

6. If the relationship between propensity to vandalize and wilderness anxiety exists, then it would be logical to conclude that KDFWR camp programs will result in improved environmental behavior among the participants.

Recommendations

In light of the above, the following recommendations are made:

1. Additional study of the relationship between wilderness anxiety and environmental behavior be conducted

2. Studies related to developing a better understanding of the factors influencing regional differences in self-concept and wilderness anxiety should be undertaken

3. Findings of this study should be used to strengthen KDFWR's programs .

4. Research related to the behavioral effects of instructional programming should be continued

5. The KDFWR is encouraged to strengthen research relationships with state universities.

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